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MAKING A MODEL TO SHOW HOW FORESTS PREVENT EROSION

LEAFLET NUMBER FIFTY-EIGHT

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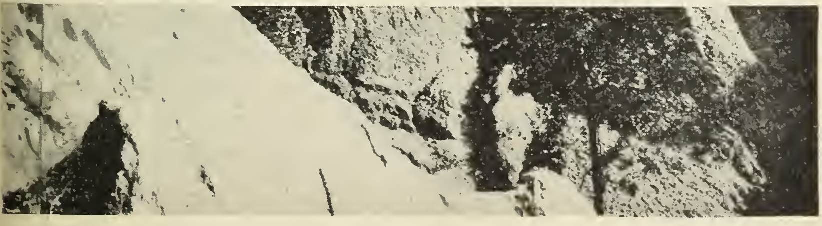

LAND EROSION, SHOWING RAPID REMOVAL OF THE SOIL BY HEAVY RAINS, WHEN THE FOREST COVER IS REDUCED OR DESTROYED.

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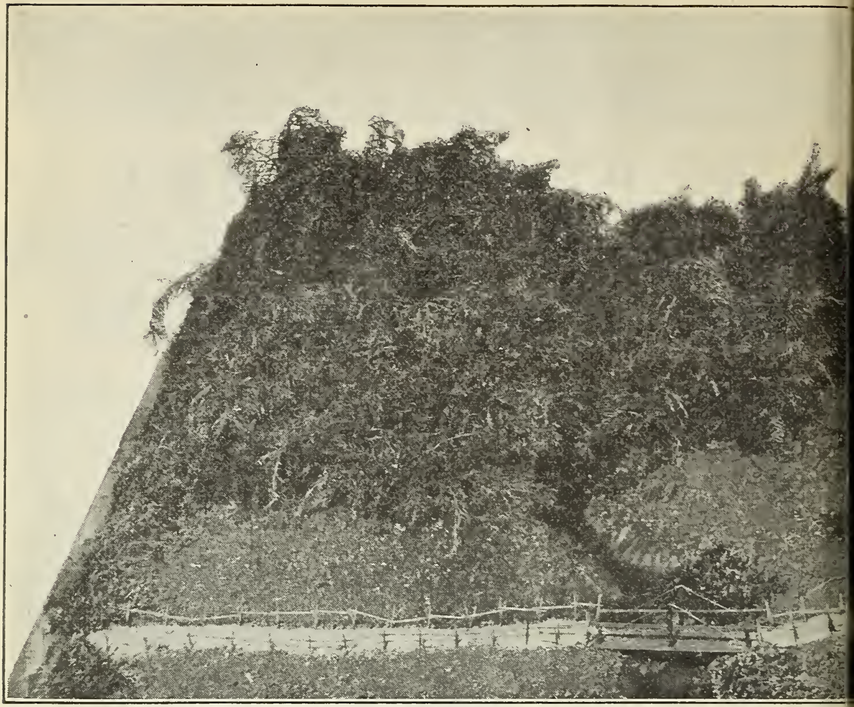


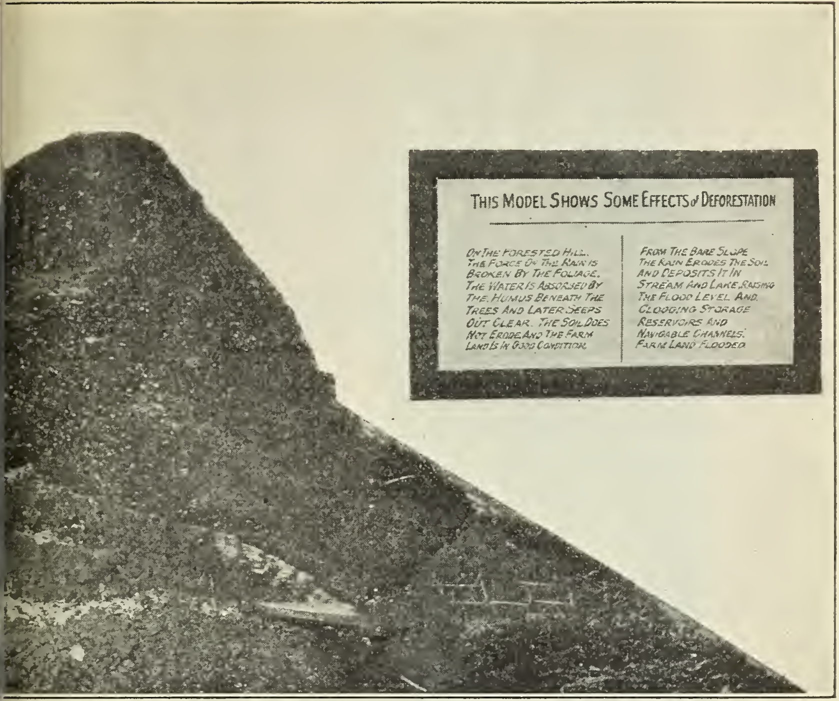
How to Make an Erosion Model

Prepared by the Forest Service

A model of comparatively simple construction can be prepared by any school, 4–H club, or other group, that will clearly show the effect of forest cover in soil and water conservation.

The demonstration may be made out of doors on the ground, or indoors. If prepared indoors, a suitable base for the model is needed, such as a wooden tray, 3 to 5 feet square and about 6 inches deep. The bottom of the tray should be made water-tight with lead paint and paraffin over the seams. Erect two large mounds of earth at the rear of the tray; pack the soil tightly, with a lessening slant toward the front. Make slight depressions for a stream leading from each hill. The rear of the tray should be raised a little higher than the front to give drainage, and shallow channels in the soil running to a drainpipe or gutter at the front will carry of the water.

Make a miniature forest by covering one of the mounds thickly with moss to represent leaf litter, leaving none of the surface exposed, and into the moss thrust small twigs of evergreens. Leave the other mound bare. Protect the stream bank on the forested side with moss.



THIS MODEL SHOWS SOME EFFECTS of DEFORESTATION

ON THE FORESTED HILL. THE FORCE OF THE RAIN IS BROKEN BY THE FOLIAGE. THE WATER IS ABSORBED BY THE. HUMUS BENEATH THE TREES AND LATER SEEPS OUT CLEAR. THE SOIL DOES NOT ERODE AND THE FARM LAND IS IN GOOD CONDITION.

FROM THE BARE SLOPE THE RAIN ERODES THE SOIL AND DEPOSITS IT IN STREAM AND LAKE, RAISING THE FLOOD LEVEL AND CLOGGING STORAGE RESERVOIRS AND NAVIGABLE CHANNELS. FARM LAND FLOODED.

Making the Demonstration

With a common garden waterpot sprinkle both mounds from a height of 3 feet or more. The water coming from the "forested" hill will clear after running a few minutes. But note how the water gullies the bare slope and runs off in muddy streams; also that the run-off is more rapid from the barren side. The forest-covered slope is protected from erosion, and the run-off remains clear, for the trees break the rainfall, causing the raindrops to shatter and trickle down the limbs and trunks or to drip slowly to the ground. The spongy leaf litter allows the water to percolate gradually into the soil and find its way to the springs and streams.

What the Demonstration Proves

Barren slopes have no protection from beating rain and no tangle of roots to hold the soil in place. The water runs off rapidly, carrying away the fertile topsoil to be deposited in the valleys or to clog the streams. And because muddy water clogs the pores of the soil, little of it is absorbed to feed springs and streams, which without a constant supply of water soon dry up.

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